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Abstract

COST OF TRANSPORTING IRRADIATED FUELS AND MAINTENANCE COSTS OF A CHEMICAL TREATMENT PLANT FOR IRRADIATED FUELS

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Numerous studies have been made of the cost of a fuel cycle, but many of them are based on a priori studies and are therefoce to be treated with reserve. Thus, in the part dealing with the treatment of irradiated fuels, some important factors in the cost have only rarely been given on the basis of practical experience : the cost of transporting the fuels themselves and the plant maintenance costs.

Investigations relating to transport costs are generally based on calculations made from somewhat arbitrary data. The studies carried out in France on the transport of irradiated uranium between the EDF reactors at Chinon and the retreatment plant at La Hague of the irradiated uranium from research reactors to foreign retreatment plants, are reported ; they show that by a suitable choice of transport containers and details of expedition it has been possible to reduce the costs very considerably. This has been achieved either by combining rail and road transport or by increasing the writ capacities of the transport containers : an example is given of a container for swimming-pool pile elements which can transport a complete pile core at one time, thus substantially reducing the cost.

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Studies concerning the maintenance costs of retreatment plants are rarer still, although in direct maintenance plants these figures represent an appreciable fraction of the total treatment cost. An attempt has been made, on the basis of operational experience of a plant, to obtain some idea of these costs. Only maintenance proper has been considered, excluding subsidiary operations such as the final decontamination of apparatus, the burial of contaminated material and radioprotection operations. Maintenance has been divided into three sections : mechanical maintenance, maintenance of electrical equipment and maintenance of control and adjustment apparatus. In each of these sections the distinction has been made between manpower and the material side. In order to allow comparisons to be made with other plants, an attempt has been made to express the maintenance costs as a percentage of the investments corresponding to each of the sections considered.

The unequal aspect of maintenance in a plant of this type is demonstrated, this being due particularly to the inacessibility of most of the equipment during operation.

Finally some conclusions are drawn on what the maintenance costs could be and the means of reducing them in future plants.